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Smart thermostats

Sensors enable smart thermostats to operate with best accuracy, reliability, and low power consumption

Smart thermostats serve a dual purpose: monitoring and regulating indoor temperature, humidity and for some, CO_2 levels. These seamlessly integrate with the smart home ecosystem, connecting to heating modules, HVAC, and heat and energy recovery ventilation systems. Beyond ensuring a comfortable environment, they play a crucial role in optimizing energy consumption through intelligent algorithms, geo-fencing, and other advanced features.

Target customers:
- Thermostat manufacturers (OEMs & ODMs)

Application challenges

1. Size constraints
2. High accuracy and reliability
3. Cost pressure
4. Compliance with building standards

Sensirion's solutions

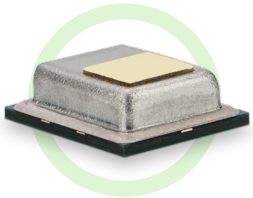
1. Sensirion's temperature, humidity and CO_2 sensors are among the smallest on the market
2. Proven by the use in millions of households for successful climate management
3. Sensor variants tailored for every application need and budget
4. Multiple sensor variants are compliant with ASHRAE, RESET, WELL and California Title 24

SENSIRION

Sensirion sensor solution:

SHT40: High accuracy humidity and temperature sensor

Size (LxWxH): 1.5 x1.5 .05 mm3



STCC4 (upcoming Q1 2025): CO_2 sensor with unmatched form factor

Size (LxWxH): 4 x 3 x 1.2 mm3

Key sensor features

- SHT40: High accuracy over a wide operating range (± 1.8% RH, ± 0.2° C)
- STCC4: Current consumption of 850uA
- Fully factory calibrated
- Cost efficient

Other applications

- Indoor air quality monitors
- Smart speakers
- Mobile phones, laptops, tablets
- Air purifiers
- Trackers and data loggers (SHT43)

FAQs

- **What support does Sensirion offer for successful design-in?**
  If support for design-in, algorithm development or data analysis is necessary, Sensirion's field application engineering teams cover all continents and are ready to support. With excellent sensor expertise, design-in experience, in-house testing set-ups and applications insights, with Sensirion you can comfortably rely on bringing solutions successfully to market.
- **At what point in the development process do I need to involve Sensirion?**
  Involving Sensirion should occur as soon as the design and requirements of the application have been defined. Early collaboration ensures optimal sensor performance in the end device and preventing common pitfalls.
- **What is the value of adding a CO_2 feature to a thermostat?**
  CO_2 detection is crucial for defining air freshness, as high levels indicate poor air quality. Numerous research proved a clear correlation between CO_2 levels and sleep quality, cognitive performance and virus infection risk. Integrating a CO_2 sensor can prompt manual action such as opening a window or an automated response such as activating an HRV system.
- **Why Sensirion?**
  As one of the largest manufacturers, Sensirion sensors are integrated into millions of households worldwide, intensively cooperating with numerous renowned brands. With decades of experience, robust supply chains and manufacturing control, Sensirion ensures top-quality products.

Getting started

SHT40 evaluation kit

STCC4 product page

Useful documents

Datasheets, application notes, handling instructions, sample codes, step files, certificates

Related sensors

↗SHT41
↗SCD41
↗SGP41

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